REMARKS

In the Office Action, dated August 29, 2008, the Examiner states that Claims 12 and 17-18 are pending and rejected. By the present Amendment, Applicant amends Claim 12.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Samecki (US 2003/0089252) in view of Snider (US 2001/0003222), Park et al. (US 5,053,298) and Roitman (US 5,972,419) for the reasons of record. Applicant respectfully disagrees with and traverses this rejection.

At the outset, Applicant has added features regarding "xylene is used as a solvent in the light emitting layer forming coating solution" and "a material which can be dissolved or dispersed into xylene is used as a light emitting material in the light emitting layer forming coating solution" to Claim 12.

In Examples and Comparative Examples of the present specification, "xylene" is used as a solvent of the light emitting layer forming coating solution. Further, in page 16, line 22 of the present specification, "xylene" is listed as an example of solvents which can be used in the present invention. Still more, since xylene is used "as a solvent which dissolves or disperses the light emitting material to provide the light emitting layer forming coating solution (page 16, lines 15-17)", it is recognizable that the light emitting material is "a material which can be dissolved or dispersed into xylene". Thus, no new matter is added to currently amended Claim 12.

In light of such amendments, Applicant respectfully asserts that currently amended Claim 12 is not obvious over any of the cited prior art.

Toluene is usually used in the printing of magazines, etc. However, in the present invention, xylene is used as a solvent included in the light emitting layer forming coating solution. This is because the present inventors have found out that, since boiling point of xylene is higher than that of toluene, xylene is preferable for a solvent to dissolve or disperse organic EL light emitting materials used in organic EL layer forming printing method (gravure printing).

In the intaglio printing used in the present invention, since the light emitting layer forming coating solution whose viscosity is much lower than that used in conventional intaglio printing is used, the light emitting layer forming coating solution in the cells of the intaglio plate wet and spread after it is transferred onto a body to be printed. For example, to form the light emitting layer having a shape shown in

Fig. 1B of the present application, the intaglio plate whose shape of the cells is shown in Fig. 1A is used. The shape of the layer to be formed and the shape of the cells of the intaglio plated to be used differ from each other. This is because, even though the light emitting layer forming coating solution has the same shape as the cells shown in Fig. 1A just after the transfer onto the body to be printed, after the transfer, the light emitting layer forming coating solution we and spread to have the shape shown in Fig. 1B. In the present invention, even though the intaglio method is used, thin layers having uniform thickness can be formed by wetting and spreading the light emitting layer forming coating solution.

For the reasons described above, "leveling ability", so as to wet and spread evenly on the body to be printed, is required to the light emitting layer forming coating solution used in the present invention. This is because in a case where the light emitting layer forming coating solution has no leveling ability, the light emitting layer forming coating solution would not wet and spread evenly to the regions of the body to be printed corresponding regions between the cells so that uniform film cannot be obtained. In the present invention, from the point of view, as a solvent, that greatly influences the leveling ability of the light emitting layer forming coating solution, xylene having ideal boiling point and contact angle (contact angle on the body to printed to be 20° or less) for wetting and spreading is used.

Since xylene is used as a solvent of the light emitting layer forming coating solution in the present invention, the light emitting material used for the light emitting layer forming coating solution must be "a material which can be dissolved or dispersed into xylene."

With respect to the cited prior art, Sarnecki discloses formation of organic EL layer by gravure printing. However, Sarnecki discloses that gravure inks are of "intermediate viscosity", compared to screen inks need to be quite viscous and inkjet inks watery thin (paragraph [0011]). Therefore, it is likely that Sarnecki uses relatively high viscosity ink such as an ink used in conventional gravure printing. That is, much higher viscosity than that of the light emitting layer forming coating solution used in the present invention.

Sarnecki discloses xylene as an example of a solvent that can be used (paragraph [0020]). However, since Sarnecki discloses inks having much higher viscosity than the present invention, there would be absolutely no suggestion or

motivation for one of ordinary skill in the art to select a solvent from the disclosure of Sarnecki. This is because the leveling ability of the light emitting layer forming coating solution, such as viscosity and contact angle, is greatly influenced by the property of the solvent to be used. Thus, those skilled in the art would not select a solvent from the disclosure of Sarnecki disclosing totally different ink viscosity.

Snider discloses the use of low viscosity ink gravure printing. However, the ink Snider discloses is "a suspension of at least one disperse dyestuff in a solution of a thicker in water" (claim 1, etc.). Since the light emitting material "which can be dissolved or dispersed into xylene" used in the present invention cannot be dissolved or dispersed into water, it is obvious to those skilled in the art that the light emitting material used in the present invention would not work in the invention by Snider. Therefore, one of ordinary skill would gain no useful information upon referring to the disclosure of Snider wherein only those soluble in water can be used. There would be no teaching, suggestion or motivation to one of ordinary skill attempting to prepare the light emitting layer forming coating solution using "a material which can be dissolved or dispersed into xylene" as the light emitting material and using xylene as the solvent.

Further, Snider discloses "a process for producing a colored polyester film." Since the films produced by the process of Snider is used for window films for automobile, domestic and office windows to control solar application, such films need to have some thickness to endure forces during application to the windows. Therefore, the films produced by the process of Snider are "1 to 10 micron thick" (paragraph [0028]), which is much thicker than the thickness in the present invention "100 Å to 2,000 Å". Even the viscosity of the ink used by Snider is similar to that in the present invention, the produced films in these invention have totally different thickness. The difference in the thickness is due to colorants (light emitting material) contained in the ink and/or contact angle, etc of the solvent used for the ink. For example, particles of micron order size, that is, "particles no larger than 50 micron in size, further preferably less than about 1micron" (paragraph [0027]) are used in the ink of Snider. If such micron order sized particles are included, thin films having "100 Å to 2,000 Å", as that in the present invention, cannot be obtained.

As described above, even if Snider discloses a similar viscosity as that used in the present invention, the following features are either not taught or are totally

different: solvent used in the ink; solute dissolved or dispersed into the solvent; and thickness of the obtained film by using the ink in the printing method using an intaglio. Further, the invention of Snider is related to applying an ink of only one color evenly in some thickness. Thus, even though 5 cited references are combined together extremely thin uniform high precision pixels cannot be obtained by applying inks of three different colors in a pattern. That is, the present invention cannot be achieved by combining other cited references with the invention of Snider, which merely discloses using low viscosity ink in gravure printing.

Roitman discloses formation of a wettability region to retain the ink landed on the region in ink application using dispenser (noncontact applying method such as ink jet method). Thus, implications of "leveling ability" is totally different from that in the printing method using an intaglio. Also, the invention of Miyashita is related to the contact angle concerning ink jet nozzles as shown in Fig. 11. Thus, implication of leveling ability is totally different from that in the printing method using an intaglio. Since Miyashita uses noncontact dispenser (ink jet apparatus), the object of Miyashita is to solve the problem concerning ink flight trajectory from the ink jet nozzle to the surface of the body to printed.

Both Roitman and Miyashita are related to wettability and contact angle in case of using noncontact dispenser. Therefore, those skilled in the art would know that there is no use to apply such disclosure to the printing method using an intaglio.

In light of the foregoing response, all the outstanding objections and rejections are considered overcome. Applicant respectfully submits that this application should now be in condition for allowance and respectfully requests favorable consideration.

Respectfully submitted,

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Attorney for Applicant
Brian W. Hameder
c/o Ladas & Parry LLP
224 South Michigan Avenue
Chicago, Illinois 60604
(312) 427-1300
Reg. No. 45613